Meeting National Security Challenges

Defense Strategic Goal: *To protect our national security by applying advanced science and nuclear technology to the Nation's defense.*

"As beneficiaries of a proud heritage dating from the Manhattan Project, NNSA is building upon an enduring legacy by identifying and embracing its core values: Excellence, Integrity, Respect and Teamwork."

Linton F. Brooks, Administrator
National Nuclear
Security Administration

One of the primary responsibilities of the Department is to enhance national security through the application of nuclear technology. To accomplish this goal the Department oversees maintenance of the U.S. nuclear weapons stockpile, development of responsive infrastructure that can adapt quickly to stockpile changes while still drawing down the stockpile of weapons excess to defense needs, security of the nuclear complex, strengthening of international nuclear nonproliferation controls, reduction in global danger from weapons of mass destruction, provision to the U.S. Navy of safe and effective nuclear propulsion systems, and operation of its national laboratories. The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the Department, is responsible for these activities critical to our national security.

A number of events and actions have shaped the NNSA's nuclear security mission. These include the challenges identified following the September 11, 2001, terrorist attack, the U.S. Nuclear Posture Review, the Moscow Treaty, and the Global Threat Reduction Initiative.

September 11, 2001

The Department of Energy's first response following the September 11, 2001, terrorist attacks was to secure its most critical infrastructure and upgrade its response assets available to be deployed in emergencies around the world. As a result of the priority given to these efforts, considerable progress has been made. The Department issued a revised Design Basis Threat (DBT) in May 2003, identifying the postulated threat in terms of numbers of adversaries and weapons capabilities that DOE sites were expected to design their security strategy to meet.

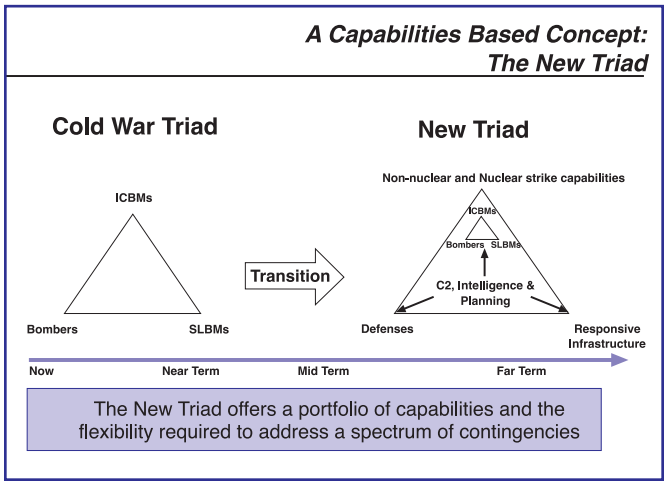
In February 2004, the DBT Implementation Plans for each NNSA site were approved. These site plans identify the actions considered necessary to upgrade each site's individual security posture to meet the Secretary's mandate to be in compliance with the revised DBT policy by the end of FY 2006. DBT implementation will be the focus of the Safeguards and Security program during the next two fiscal years in order to ensure the Secretary's FY 2006 compliance mandate is met.

Post September 11, 2001, enhanced site security is provided through the Department-wide Design Basis Threat Response.

The Nuclear Weapons Incident Response (NWIR) program responds to and mitigates nuclear and radiological incidents worldwide with capabilities that include technical personnel, equipment for monitoring and predicting environmental impacts of radiation, and medical and health support. As a result of "no-notice" exercises and other ongoing efforts, team members are now more extensively trained and prepared. In FY 2004, all of the emergency response equipment was upgraded. This goal was accomplished four years ahead of schedule.

Nuclear Posture Review

As the Nuclear Posture Review (NPR) articulated in 2002, the 21st century presents the prospect of a national security environment in which threats may evolve more quickly, be more variable in nature, and be less predictable than in the past. In this broad threat environment, the NPR recognized that nuclear weapons will continue to play a critical role in the overall U.S. security posture. The NPR affirmed that, for the foreseeable future, offensive strike systems, both nuclear and non-nuclear, integrated with both passive and active defenses and a revitalized defense infrastructure, will become the New Triad. Recently, a number of noteworthy accomplishments have been made under initiatives to implement the responsive infrastructure required in the New Triad. This portion of the New Triad is of critical significance to the Department.



The most important responsibility of the Secretary of Energy, in cooperation with the Secretary of Defense, is the certification to the President that the nuclear weapons stockpile is safe, secure and reliable and that there is no need for underground nuclear testing. The NNSA's science-based Stockpile Stewardship Program (SSP) was developed specifically to provide this confidence in our nuclear deterrent force while adhering to the nuclear testing moratorium. Often underfunded following the end of the Cold War, the SSP was designed to enhance the infrastructure necessary to create, design and deliver the capabilities so vital to our nuclear deterrent. By specifically identifying responsive infrastructure as a "leg" of the New Triad, the NPR highlighted the NNSA's important role as steward of this process and provided the rationale for increasing SSP focus and funding.

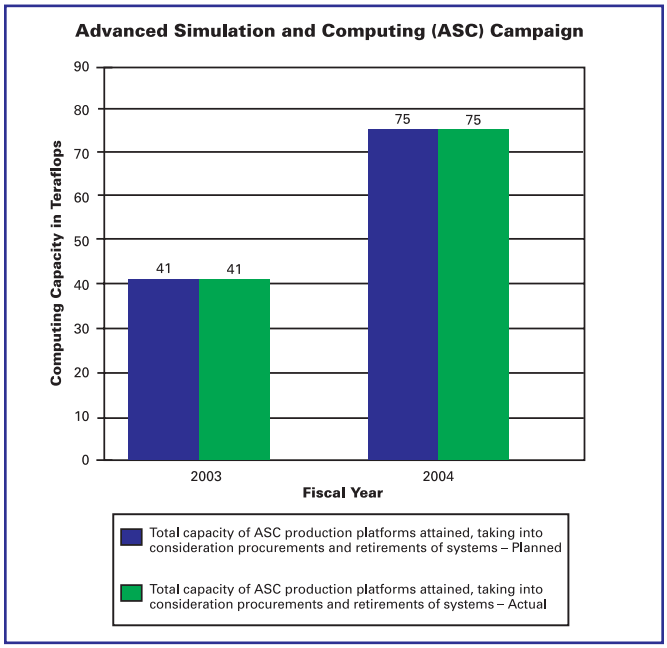
With respect to infrastructure revitalization, the Facilities and Infrastructure Recapitalization Program (FIRP) authorized projects in FY 2004 that reduced deferred maintenance by a cumulative eight percent of its long-term goal. By 2009, the backlog of stockpile-related facilities deferred maintenance will be reduced to an acceptable

level, consistent with industry standards and facilities management best business practices. Modernization of the Nation's defense capabilities helps ensure that future Presidents will have the ability to contemplate deterrence options to respond to new and emerging threats that are dramatically different from those of the Cold War.

As part of the warhead stockpile stewardship responsibilities, last year saw the first manufacture of a certifiable plutonium pit since the closure of Rocky Flats in 1989. The pit is part of the "trigger" for a nuclear weapon, without which it cannot function. Three additional pits were manufactured in 2004. The NNSA continues making progress toward building a modern pit manufacturing facility. In addition, progress continued on construction on a facility to extract and refresh tritium, a gas that is required for all U.S. nuclear warheads to operate as designed.

The NNSA continues to develop the predictive capabilities needed for weapons certification and assessment as well as to evaluate phenomena that results from changes to the devices from the way they were originally designed and built. To address this challenge and to quantify the uncertainties will require computer capabilities beyond the 100 trillion operations per second "Purple" platform being delivered in 2005. These computers will ultimately help conduct nuclear stockpile certification for all weapons systems using highly complex, three dimensional simulations. The Dual-Axis Radiographic Hydrotest (DARHT) facility has started to provide images of weapons implosion processes. The use of lasers to simulate detonations was initiated at the National Ignition Facility (NIF) in 2004. Each of these systems is essential for assuring the safety, security, and reliability of nuclear weapons without underground testing. Although still under construction, four of the NIF's 192 laser beams are already operating and being used to conduct experiments in thermonuclear fusion ignition and high-energy-density physics.

Current progress in computer capacity is shown in the following graph.



The Naval Reactors program has embarked on the development of a new reactor core, the Transformational Technology Core (TTC), to provide increased energy for its newest class of attack submarines. TTC will use new core materials to achieve a greater energy density – more energy in the reactor without increasing size, weight, or space while maintaining a reasonable cost – for future VIRGINIA class attack submarines. This is important to better serve the Navy's mission requirements including increased operational demands.

NNSA provides the nuclear propulsion plant for the Virginia Class attack submarine.

Moscow Treaty

The strategic nuclear weapons reductions anticipated in the NPR were codified by President Bush on May 24, 2002, in the Strategic Offensive Reduction Treaty (commonly referred to as the Moscow Treaty) with Russian President Putin. The Moscow Treaty called for a two-thirds reduction over the next decade in the number of today's operationally deployed strategic nuclear warheads. To implement the treaty, the NNSA, in conjunction with the Department of Defense, will reduce this number from today's level of 6,000 to between 1,700 and 2,000 by 2012. Russia has agreed to similar reductions.

Furthermore, in a report to Congress dated June 3, 2004, the NNSA Administrator detailed a plan for the significant reduction in the U.S. nuclear weapons stockpile facilitated by the Moscow Treaty. The plan, recently approved by the President, will lead to a significant decline – by nearly half – in the size of the total U.S. nuclear weapons stockpile (deployed weapons, spares, etc.) by 2012. Such a level has not been seen in several decades.

The reduction in the number of warheads allows certain programmatic realignments. Since fewer warheads will need to be refurbished and maintained, more resources can be directed at developing a smaller, more robust infrastructure in the U.S. to maintain deterrence and respond to evolving future threats. Finally, increased resources for U.S. assistance to help Russia with their significant warhead dismantlement requirements of the Moscow Treaty can also be anticipated.

One project impacted by these reductions is the Tritium Extraction Facility. Construction of this facility in South Carolina was 90% complete in 2004. Immediate plans for this facility are directed at extracting and renewing tritium in existing warheads. A smaller stockpile, though, will mean the renewal of fewer warheads and the capability to decommission retired warheads sooner.

Global Threat Reduction Initiative and Related Non-Proliferation Activities

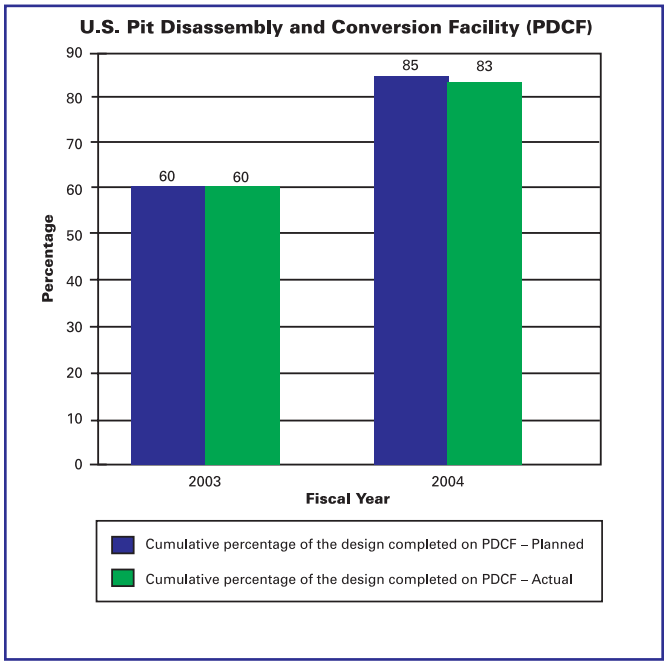
On May 26, 2004, Secretary Abraham launched a comprehensive global initiative to secure and remove high-risk nuclear and radiological materials that pose a threat to the United States and the international community. As part of the Global Threat Reduction Initiative, the Department will be developing a threat-based, prioritized approach to systematically address facilities that possess high-risk fissile and other nuclear materials. DOE, in conjunction with the Department of State, will also be preparing the diplomatic strategy necessary to secure, remove, or eliminate these materials. The Department will draw from its world class scientific and technical expertise and leverage existing non-proliferation programs to identify and prioritize vulnerable materials, remove or secure such materials, convert research and test reactors, and take any other steps necessary to meet changing threats.

Immediately following the announcement of the Global Threat Reduction Initiative, Secretary Abraham and Director Rumyantsev of the Russian Federal Agency for Atomic Energy signed a bilateral agreement concerning the repatriation of Russian-origin highly-enriched uranium (HEU) research reactor fuel to Russia. Under this agreement, more than a dozen countries are eligible to receive financial and technical assistance from the United States and others to ship their fresh and spent research reactor fuel to Russia for safe and secure management. More than 20 research reactors in 17 countries have been identified as having Russian/Soviet-supplied fuel.

With respect to foreign nuclear fuel originating in the United States, Secretary Abraham directed the NNSA to initiate actions necessary to extend the program's fuel acceptance deadline. Under the U.S.-origin spent fuel return program, approximately 1,100 kilograms of HEU spent fuel have been returned to the United States for final disposition.

In separate non-proliferation activities, new efforts are underway to extend to international ports NNSA's successful "Megaports" program, which installs sophisticated detection equipment at many of the world's critical cities. This Second Line of Defense (SLD) program provides detection systems worldwide in order to minimize the risk of nuclear proliferation and terrorism through detection and deterrence of illicit trafficking at international borders. As of the end of FY 2004, a total of 66 sites including 2 Megaports completed the installation of SLD equipment with a total of 300 sites and 20 Megaports to be completed by 2012.

NNSA's "Megaports" program provides radiological detector equipment to prevent/detect the movement of radiological materials via cargo ships before they enter U.S. waters.



To further limit the threat arising from nuclear proliferation, the NNSA is reducing the world's stocks of dangerous materials, such as HEU, through a variety of programs to convert this material to low-enriched uranium (LEU), and plutonium, through Fissile Materials Disposition programs in the U.S. and Russia. The NNSA is also working with its Russian counterparts to eliminate Russian plutonium production. Another initiative to reduce nuclear proliferation is the Pit Disassembly and Conversion Facility (PDCF). The above graph depicts the progress made in completing the detailed design of the facility. The FY 2004 goal of 85% completion was delayed due to a work stoppage at Los Alamos National Laboratory. The project is on track to complete the design by the end of FY 2005.

The following sections contain an overview of the results associated with performance against the most significant defense goals and annual targets for FY 2004.

Defense General Goals

Performance Scorecard:

DEFENSE ($ in Millions)

GENERAL GOAL	FY04 PROGRAM COST	FY03 PROGRAM COST	PROGRAM GOALS	*FY 2004 Budgetary Expenditures Incurred	OVERALL PROGRAM SCORE	PERFORMANCE OF ANNUAL TARGETS			
						MET	NOT MET (≥80%)	NOT MET (<80%)	UNDETERMINED
Nuclear Weapons Stewardship	$6,220	$5,214	Directed Stockpile Work	$1,352		4	3	0	
			Science Campaign	$232		3	1	1	
			Engineering Campaign	$331		5	0	0	
			ICF/NIF	$467		2	2	1	
			ASCI	$719		3	1	1	
			Pit Manufacturing	$256		2	1	2	
			Readiness Campaign	$215		3	1	0	
			RTBF O&M	$1,319		2	0	0	1
			RTBF Construction	$191		1	1	1	
			Secure Transportation Asset	$153		3	1	0	
			Nuclear Weapons Incident Response	$102		4	1	0	
			Facilities & Infrastructure Recap Program	$269		3	0	0	
			Safeguards and Security	$575		3	1	1	
			Office of Administrator**	$282		2.5	0.5	0	
Nuclear Nonproliferation	$1,101	$968	Nonproliferation Verification R&D	$237		3	1	0	
			HEU Transparency Implementation	$18		3	0	0	
			Elimination of Weapons-Grade Plutonium Production	$58		1	1	1	
			Nonproliferation and International Security	$115		3	1	1	
			Russian Transition Initiative	$50		4	0	0	
			International Materials Protection and Cooperation	$334		4	3	0	
			Fissile Material Disposition	$342		2	2	1	
			Off-Site Source Recovery Program	$4		3	0	0	
			Office of Administrator**	$56		2.5	0.5		
Naval Reactors	$740	$687	Naval Reactors	$738		7	0	0	
Total Costs	$8,061	$6,869		$8,415		73	22	10	1

*Includes capital expenditures but excludes such items as depreciation, changes in unfunded liability estimates and certain other non-fund costs, and allocations of Departmental administration activities.
**Program Goal shared by two General Goals

Nuclear Weapons Stewardship – General Goal 1:

Ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the U.S. nuclear weapons stockpile.

The most important responsibility of the Secretary of Energy, in cooperation with the Secretary of Defense, is certifying to the President that the Nation's nuclear weapons stockpile is safe, secure, and reliable. To do so, the NNSA develops a nuclear weapons stockpile surveillance and engineering capability; refurbishes and extends the lives of selected nuclear systems; and maintains a science and technology base, including the ability to restore the manufacturing infrastructure for the production of replacement weapons, should the need arise. These capabilities ensure the vitality of our nuclear weapons without the need for underground nuclear testing.

External Factors

The following external factors could affect our ability to achieve this goal:

- **Technology**: Technological development is inherently unpredictable. The discovery of an insurmountable scientific or engineering obstacle in a credible science-based stockpile stewardship program could force the resumption of underground nuclear testing.
- **Nuclear Threats**: Changes in the nuclear threats posed to the United States could require changes to our nuclear weapons stewardship programs.

How We Serve the Public

In addition to certification of the nuclear stockpile, the NNSA accomplished a number of significant milestones during 2004. These milestones represent activities that enhance nuclear security by using the most economically sound means.

- Completed 100% of the work on the W87 warhead Life Extension Program for the United States Air Force. This, like the other Life Extension Programs, is another cost-effective way to provide nuclear security.
- Reduced the need for underground testing by: (1) attaining a total capacity of Advanced Simulation Computing production platforms of 75 trillion operations per second; (2) beginning operations at the NIF at limited power in December 2003; and (3) executing the first experiments on the DARHT equipment.

The B83 weapons assembly shows the complexity of these nuclear weapons.

- Completed an aggregate total of 90 percent of the Tritium Extraction Facility. Tritium, a requirement in all U.S. nuclear weapons, must be extracted and replaced periodically to maintain the existing stockpile.
- Authorized projects to reduce the NNSA excess facilities footprint by another 525,000 gross square feet (GSF). More than half of the long-range goal reduction of 3 million GSF is now underway. This reduction will result in reduced maintenance and security costs.

Program Goals and Targets Supporting Nuclear Weapons Stewardship

One of the main activities supporting General Goal 1—to ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the U.S. nuclear weapons stockpile—is the certification of the nuclear stockpile to the President. Through 2004, the NNSA, jointly

with the Department of Defense (DoD), successfully completed the surety and assessment reports to support certification on the nuclear stockpile. (DP GG 1.27.1). This assessment/certification activity is critically important to the U.S. national security in the absence of underground nuclear weapon testing, which has been banned by U.S. adherence to the 1992 moratorium. The NNSA ensures that the nuclear warheads and bombs in the U.S. nuclear stockpile are safe, secure, and reliable by: (1) developing solutions to extend weapon life and correcting potential technical issues; (2) conducting scheduled warhead/bomb maintenance; (3) dismantling warheads/bombs retired from the stockpile; (4) conducting evaluations to certify warhead/bomb reliability and to detect/predict potential weapon fixes, mainly from aging; (5) producing and refurbishing warheads/bombs to install the life extension solutions and other fixes; and (6) researching advanced concepts (DP GG 1.27).

Without the underground testing to assure the reliability of the nuclear stockpile as required in General Goal 1, the NIF is used to create and measure extreme temperature and pressure conditions of a simulated nuclear explosion (DP GG 1.30). While the overall goal to complete the NIF by 2008 is on track, one target for this goal – to complete 16 percent of equipment fabricated to support ignition experiments at the facility (DP GG 1.30.4) – was not met; 12% was achieved. To correct this, the Mission Need for the NIF Cryogenic Target System (NCTS) was approved and alternative options to accomplish NCTS are now being developed. The effort has been rescheduled to the second quarter, FY 2005. This revised schedule remains consistent with the central program goal of demonstrating thermonuclear ignition of the NIF by 2010.

The stockpile stewardship activities of General Goal 1 necessitate a capability for the safe and secure transport of nuclear weapons, components, and materials that will meet projected DOE, DOD, and other customer requirements (DP GG 1.36). Advanced equipment and highly trained personnel are required to execute the mission. In FY 2004, 91 secure convoys were completed, thereby meeting the goal to exceed 90 secure convoys. This was up from 78 a year earlier and showing a steady year-to-year growth (DP GG 1.36.1).

Secure Transportation Asset Convoy Vehicle ensures safe and secure warhead movements.

More detailed information concerning the performance results for the above referenced goals and targets is available in the Performance Results Section.

Nuclear Nonproliferation – General Goal 2:

Provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons.

The NNSA reduces the threat posed by the proliferation of fissile material by helping to secure foreign stockpiles of weapons-grade material. In addition, the NNSA oversees the dismantlement, destruction, and ultimate disposition of weapons including the downblending of HEU or the burning of plutonium as mixed oxide fuel (MOX) in nuclear energy plants. The NNSA further reduces risk through controlling exports of nuclear-related technologies, monitoring borders for the movement of fissile materials, and ensuring the employment of foreign nuclear-related scientists and engineers in other more productive pursuits.

External Factors

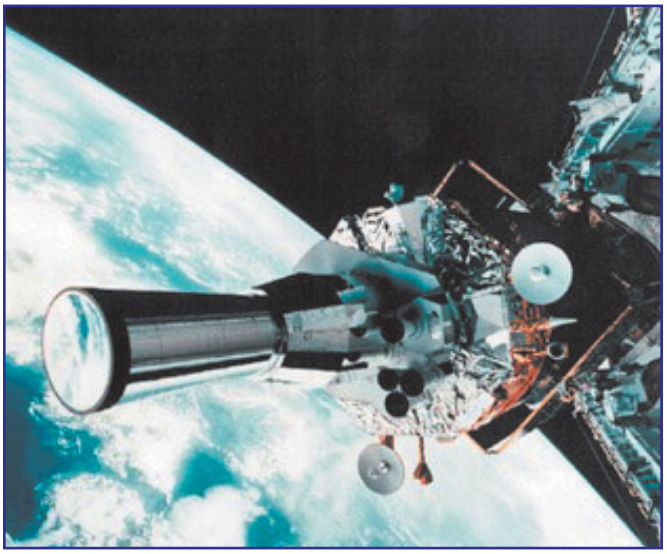
The following external factors could affect our ability to achieve this goal:

- **Close Cooperation with Russia:** Unprecedented levels of cooperation between the United States and Russia have made it possible to make great strides in securing and eliminating inventories of surplus materials. A close relationship is necessary for future progress.
- **International Atomic Energy Agency (IAEA)**: The IAEA is essential to the success of our efforts to control nuclear proliferation. It is uncertain whether the IAEA will receive the necessary funding and show the necessary leadership to member countries. We are monitoring this situation closely.
- **Technology:** Technological development is uncertain and unpredictable. Our efforts to develop nuclear weapons/material detection technology may be more or less successful than predicted, which would have a corresponding positive or negative impact on our efforts.

How We Serve the Public

In addition to the Global Threat Reduction Initiative activities already discussed, the NNSA conducted a number of high-profile operations in 2004 aimed at reducing the risk associated with proliferation. On May 25, 2004, in Greece, Secretary Abraham officially transferred hand-held radiological detection equipment to Greek officials to support increased security for the Summer Olympic Games. The radiation detection equipment was successfully used to detect or deter the illicit trafficking of nuclear and other radiological materials through ports or across international borders.

A Defense Support Program (DSP) satellite launched February 14, 2004, from Florida's Cape Canaveral included sophisticated nuclear test detection sensors from the NNSA. This equipment is used to monitor the Limited Test Ban Treaty of 1963 and to deter proliferant nations from conducting nuclear tests. The next DSP satellite, scheduled for launch in 2005, will complete the present nuclear detection sensor package design and also carry the demonstration experiment for the next generation of high altitude sensors – the Space and Atmospheric Burst Reporting System (SABRS) – that NNSA is currently developing.



The DSP supports nuclear test detection from space.

On February 25, 2004, NNSA initiated a new program to provide employment opportunities to Iraqi scientists, technicians, and engineers. This program complements other Bush Administration initiatives that seek to prevent the proliferation of weapons of mass destruction expertise to terrorists or proliferant states. The first phase of this long-term effort is the current survey of Iraq's science and technology infrastructure by scientists. Once the survey is completed, the partners will convene a workshop in the region to bring together representative experts from Iraq, the United States, the international science community, and funding organizations to discuss priorities and options for technical cooperation.

Also during 2004 the NNSA:

- Continued security upgrades on weapons-usable nuclear material. A quarter of the targeted 600 metric tons is now secure, thereby enhancing the security of our Nation.
- Created or expanded 16 commercial enterprises and employed 8,200 Russian scientists and engineers formerly employed in nuclear weapons facilities located in Russia. Similar to the aforementioned Iraqi reconstruction effort, the employment of these skilled nuclear-trained professionals in such endeavors as medical technology helps prevent the spread of sensitive knowledge to rogue states.

- Provided confidence, as part of the 1993 HEU Purchase Agreement, that Russian HEU is permanently eliminated from the Russian stockpile. Russian HEU was down blended into LEU (less than 5% U235 assay) and sold to the U.S. Enrichment Corporation (USEC). Through FY 2004, 231 metric tons of HEU, equivalent to 9,240 nuclear weapons, have been eliminated as part of 500 metric tons being eliminated by 2013.

- Recovered approximately 10,022 sealed sources of high-risk radiological sources, thereby preventing these radioactive materials from being used in a radiological dispersal device, also known as a "dirty bomb."

Program Goals and Targets Supporting Nuclear Nonproliferation

Many activities are underway to support General Goal 2 – provide leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons. For example, the NNSA is providing assistance to foreign governments to identify and intercept illegal shipments of weapons materials by working in Russia and other regions of concern to: (1) secure and eliminate vulnerable nuclear weapons and weapons-usable material; (2) locate, consolidate and secure radiological materials that can be used in a dirty bomb; and (3) install detection equipment at border crossings and Megaports to prevent and detect the illicit transfer of nuclear material (NN GG 2.46). This effort complements the Department of Homeland Security's Container Security Initiative, in which Customs and Border Protection agents partner with countries operating major shipping ports to help safeguard the international supply chain. In 2004, the target to install radioactive detection equipment at a cumulative total of 74 sites was not achieved. The length of time taken by foreign governments to review and approve agreement language resulted in a cumulative total of 66 sites provided with the equipment. (NN GG 2.46.6). Pace of implementation should increase in the first quarter of FY 2005 as Memoranda of Understanding with foreign governements are signed.

To prevent the spread of nuclear materials and reduce the threat of nuclear terrorism, the NNSA is facilitating the shutdown of the three remaining weapons-grade plutonium production reactors in Russia. This program is intended to provide an alternative fossil fuel power source to permit shutdown of the three reactors which, in addition to providing vital energy and heat for two Russian cities, also produces up to 1.2 metric tons of weapons-grade plutonium per year. This is being accomplished through: (1) refurbishment of an existing fossil-fuel (coal) power plant at Seversk (NN GG 2.42), and (2) construction of a new fossil-fuel (coal) plant at Zheleznogorsk. The NNSA had a key 2004 target for completing 16 percent of a fossil plant in Seversk, which would facilitate shutting down two weapons-grade plutonium production reactors (NN GG 2.42.1). However, after more refined estimates were developed through NNSA, U.S. contractors and their Russian counterparts, the preliminary cost assessments significantly increased. As a result, only 12.9 percent of the annual target was completed. However, additional funding should get this project on track in FY 2005.

Completion of other NNSA goals is also being compromised by an uncertain U.S./Russian diplomatic environment. Finishing the design and construction of a MOX facility (NN GG 2.47.6) for the goal of eliminating surplus Russian plutonium (NN GG 2.47) is particularly noteworthy. This program goal supports General Goal 2 by reducing the supply of fissile material. The annual target for 2004 required NNSA to complete 60 percent of U.S. assistance to the Russian Federation of the MOX fuel facility design. However, the resolution of a liability issue prevented the completion of this activity; 15% was completed. Resolution is presently being pursued by all affected agencies (e.g. DOE, DOD, and State) at the National Security Council level.

More detailed information concerning the performance results for the above referenced goals and targets is available in the Performance Results Section.

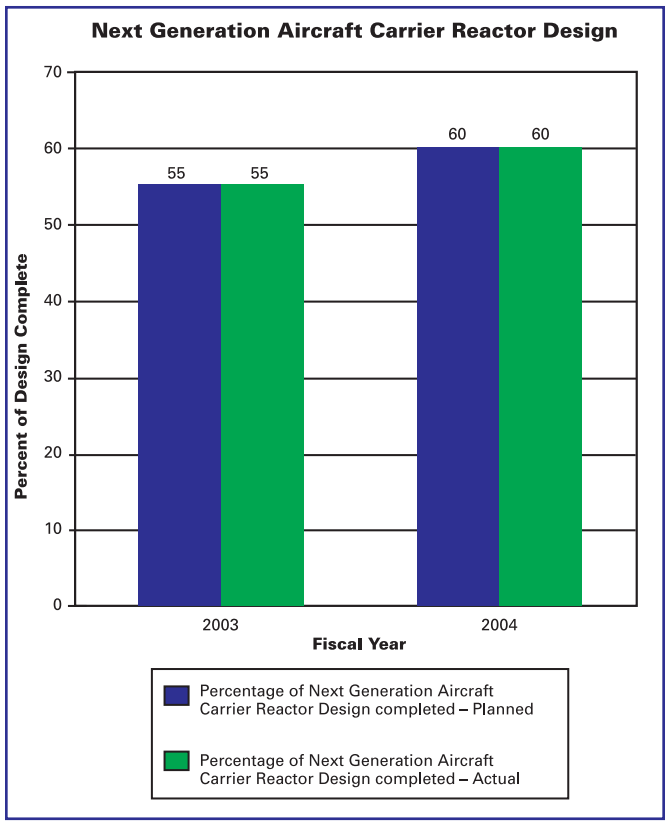
Naval Reactors – General Goal 3:

Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.

The NNSA is responsible for providing the United States Navy with safe, militarily effective nuclear

propulsion plants. Naval nuclear propulsion plants currently power about 40 percent of the Navy's principal combatants. The NNSA will continue to provide the Navy and the Department of Defense reliable and militarily effective nuclear power through the Naval Reactors program. New technologies, methods, and materials to support reactor plant design for future generations of reactors for submarines, aircraft carriers, and other combat ships are also developed under this program.

The chart below indicates that the Naval Reactors program completed 60 percent of the next generation aircraft carrier reactor design (referred to as the CVN 21) in FY 2004. The CVN 21 nuclear propulsion plant will have increased core energy, nearly three times the electrical plant generating capacity,



and will require half of the Reactor Department sailors when compared to today's operational aircraft carriers.

External Factors

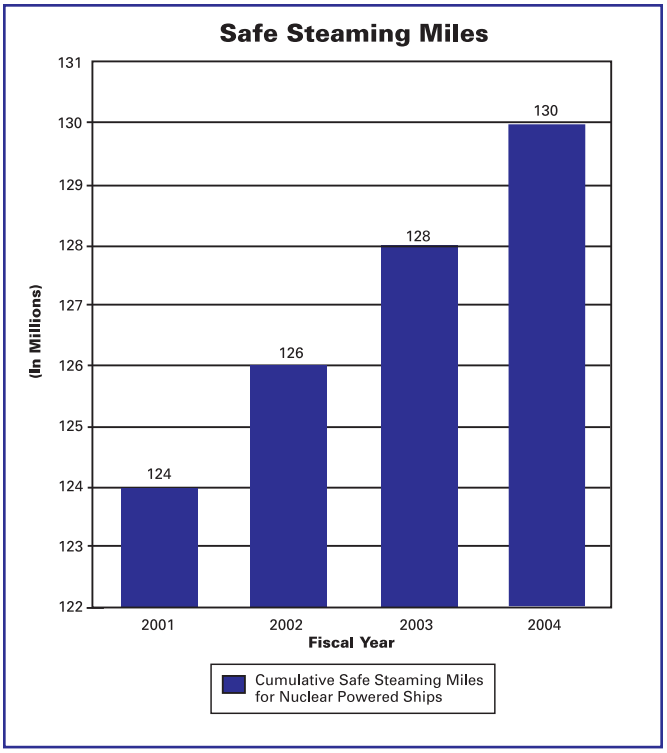
Currently, no external factors appear to impact the ability to achieve this General Goal. However, given the unique nature of the Naval Reactor's responsibilities, commitments to both DOE and the U.S. Navy must be considered at all times. Therefore, any external factor seriously affecting either organization's policies may have an impact on the Program's ability to achieve this goal.

How We Serve the Public

Naval Reactors continues the success it has had for more than 50 years, and is a prime example of how to manage unforgiving and complex technology. The Naval Reactors program, which supports the nuclear powered submarines and carriers around the world, remains a vital part of the national security mission and the Global War on Terrorism. In 2004, the Naval Reactors Program completed the next-generation submarine reactor plant design.

Program Goals and Targets Supporting Naval Reactors

The Naval Reactor's key program goal is identical to General Goal 3, which is to provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation (NR GG 3.49). FY 2004 targets to implement this goal included 2 million miles of safe steaming in nuclear-powered ships and the design



of new reactors (NR GG 3.49.1). Since its inception, the Naval Reactors program has supplied 130 million miles of safe nuclear propulsion.

More detailed information concerning the performance results for the above referenced goal and target is available in the Performance Section.

Challenges and Future Expectations

In the next 25 years, our most significant expectations pertain to stockpile security, infrastructure for weapons production, nonproliferation and naval propulsion. Associated with these expectations are a number of key intermediate objectives and long-term targets along with the challenges the NNSA faces in meeting these expectations.

The first expectation, jointly with the Secretary of Defense, is the annual certification to the President on the nuclear weapons stockpile. The main challenge here is the continuation of an effective stockpile in the face of aging nuclear weapons systems. To assure the certification, we will work toward demonstrating the full capability of the NIF by 2010. Detailed three-dimensional simulations of weapons design and performance will be routine as both improved codes and computing capability platforms are realized. Although committed to the underground nuclear testing moratorium, the NNSA has as its parallel goal to be able, if necessary, to resume/conduct an underground test in as little as 18 months.

Secondly, the NNSA will develop and maintain the facilities and infrastructure necessary to ensure the safety, security, and reliability of the stockpile. By 2009, deferred maintenance will be reduced to industry standards, and over 3 million GSF of excess space will be eliminated.

Thirdly, all worldwide nuclear materials will be under controls and surveillance acceptable to the U.S. To do this, security upgrades will be completed on 600 estimated metric tons of weapons-usable nuclear materials by 2008, and 39 Russian Navy nuclear warhead sites by 2006. The last remaining nuclear reactors in Russia that produce weapons-grade plutonium ultimately will be shutdown by 2012. By 2012, 17 metric tons of Russian HEU will be converted to LEU. In addition to these activities, radiation sensing devices will have already been installed at 300 sites around the world. Diplomatic relations and economic conditions abroad will continue to impact the ability to secure fissile materials internationally and could challenge the success of these programs.

Lastly, the NNSA continues to provide nuclear reactors that meet the U.S. Navy's operational requirements safely and reliably. With a proven record in meeting the Navy's current needs for nuclear propulsion, the NNSA is directing resources at accomplishing the new challenge of providing reactors with an even longer life.

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